

Application No. 10/692,460
Amendment dated June 19, 2007
Reply to Office Action of January 19, 2007

AMENDMENTS TO THE CLAIMS

This listing of claims shall replace all prior versions, and listings, of claims in the application.

LISTING OF CLAIMS:

1. (Currently Amended) A connecting member assembly for securing interconnecting spinal rods mounted secured to spinal vertebrae, the connecting member assembly comprising:
 - a central span; and
 - a pair of connecting ends, each end including: spinal rod connecting devices; a contact surface of each of the connecting devices for seating the connecting member on a one of the spinal rods;
 - a locking member for locking the spinal rod against the contact such that the locking member and contact form a spinal rod seat with locked and unlocked positions being shifted between a clamped position with the locking member clamping the spinal rod against the contact surface and an unclamped position with the spinal rod released; and
 - a cam rotatable actuator member connected to the locking member and rotatable against a cam surface of the connecting end for moving operable to shift the locking member between the unlocked and locked clamped and unclamped positions and to secure the locking member against the spinal rod, the actuator member being rotatable by a predetermined rotary amount to a locked position thereof corresponding to the clamped position of the locking member on the spinal rod.

Application No. 10/692,460
Amendment dated June 19, 2007
Reply to Office Action of January 19, 2007

2. (Currently Amended) The connecting member assembly of claim 1 wherein the contact surface for seating ~~the connecting end~~ on the spinal rod is an arcuate surface.

3. (Currently Amended) The connecting member assembly of claim 1 wherein the locking member has an arcuate surface such that the arcuate surface is secured against the spinal rod when in the ~~locked~~ clamped position.

4. (Currently Amended) The connecting member assembly of claim 1 wherein ~~the connecting end at least one spinal rod connecting device~~ further includes a spring retention member for biasing the locking member in the ~~unlocked~~ unclamped position.

5. (Currently Amended) The connecting member assembly of claim 4 wherein the spring retention member is compressed when the locking member is moved to a ~~locked~~ the clamped position.

6. (Currently Amended) The connecting member assembly of claim 5 wherein the spring retention member is a split ring located around the ~~each~~ rotatable actuator member, and the ring is compressed when the locking member is moved to a ~~locked~~ the clamped position.

Application No. 10/692,460
Amendment dated June 19, 2007
Reply to Office Action of January 19, 2007

7. (Currently Amended) The connecting ~~member~~ assembly of claim 1 wherein the ~~camming~~ rotatable actuator member is located in a bore in the ~~connecting end spinal rod connecting device~~, and the bore includes a pair of arcuate camming surfaces for camming against the ~~cam~~ rotatable actuator member.

8. (Currently Amended) The connecting ~~member~~ assembly of claim 1 wherein the ~~cam~~ rotatable actuator member has a recess, and the locking member is secured in the recess of the ~~cam~~ rotatable actuator member such that the ~~cam~~ rotatable actuator member and locking member may rotate relative to each other.

9. (Currently Amended) The connecting ~~member~~ assembly of claim 8 wherein the recess is an annular channel.

10. (Currently Amended) A connecting ~~member~~ assembly for securing interconnecting spinal rods ~~mounted~~ secured to spinal vertebrae, the connecting ~~member~~ assembly comprising:

a pair of ~~connecting ends~~ spinal rod connecting devices for being connected to a respective each having an arcuate surface and a locking member for seating the connecting member on a pair of spinal rods; and

a central span including:

a cross rod having opposite ends and a central longitudinal rod axis extending therebetween and being connected to one of the connecting end spinal rod connecting devices at one of the rod ends;

Application No. 10/692,460
Amendment dated June 19, 2007
Reply to Office Action of January 19, 2007

a rod receiving member having a central longitudinal receiver axis and being connected to the other ~~connecting end~~ spinal rod connecting device, the rod receiving member including an internal cavity bore oriented along the receiver axis and being configured for adjustably receiving the other end of the cross rod so that the rod may be pivoted with respect to the receiver axis to provide the rod with variable angles relative thereto and so that the cross rod may be shifted axially along the rod axis to variable depths within the bore of the rod receiving member;

a clamp device for clamping against the cross rod received in the rod receiving member; and

a sleeve for clamping the clamp device against the cross rod to fix the cross rod at an adjusted angle and an adjusted depth within the receiving member upon rotation of the sleeve around the central longitudinal axis of the rod receiving member.

11. (Currently Amended) The connecting member assembly of claim 10 wherein the internal cavity bore of the rod receiving member receives the cross rod such that the cross rod may be ~~adjustably inserted in the cavity for varying the length of the connecting member, the cross rod may be~~ adjustably rotated in the rod receiving member around a longitudinal axis of the cross rod, ~~and the cross rod may be pivoted relative to the rod receiving member.~~

12. (Currently Amended) The connecting member assembly of claim 11 wherein the clamp device may pivot to permit pivoting of the cross rod.

Application No. 10/692,460
Amendment dated June 19, 2007
Reply to Office Action of January 19, 2007

13. (Currently Amended) The connecting ~~member~~ assembly of claim 12 wherein the clamp device includes an inner surface for mating with the external surface of the cross rod.

14. (Currently Amended) The connecting ~~member~~ assembly of claim 13 wherein with at least a portion of the inner surface of the clamp device is arcuate for mating with the external surface of the cross rod, and the cross rod may be rotatably adjusted relative to the clamp device.

15. (Currently Amended) The connecting ~~member~~ assembly of claim 10 wherein the cross rod includes a protrusion for retaining the crossrod within the rod receiving member.

16. (Currently Amended) The connecting ~~member~~ assembly of claim 10 wherein the sleeve includes an internal structure that imparts a compression force on the clamp device for securing the cross rod.

17. (Currently Amended) The connecting ~~member~~ assembly of claim 16 wherein the rod receiving member includes a terminal surface for limiting the position of the clamp device.

Application No. 10/692,460
Amendment dated June 19, 2007
Reply to Office Action of January 19, 2007

18. (Currently Amended) The connecting ~~member~~ assembly of claim 17 wherein the clamp device is compressed between the terminal surface of the rod receiving member and the internal structure of the sleeve to secure the cross rod.

19. (Currently Amended) The connecting ~~member~~ assembly of claim 17 wherein the internal structure of the sleeve contacts the clamp device directly.

20. (Currently Amended) The connecting ~~member~~ assembly of claim 17 wherein the internal structure of the sleeve that contacts the clamp device includes a shoulder portion.

21-23. (Withdrawn)

24. (Currently Amended) A connecting ~~member~~ assembly for securing interconnecting a pair of spinal rods ~~mounted~~ secured to spinal vertebrae, the connecting member comprising:

a pair of ~~connecting ends~~ spinal rod connecting devices each having an arcuate surface and a locking member for ~~seating the connecting member on a~~ clamping the connecting assembly to the pair of spinal rods; and

a central span including:

a cross rod being connected to one of the connecting end devices;

Application No. 10/692,460
Amendment dated June 19, 2007
Reply to Office Action of January 19, 2007

a rod receiving member being connected to the other connecting ~~end~~ device, the rod receiving member including an internal ~~cavity~~ bore for receiving the cross rod;

a clamp device for clamping against the cross rod when received in the rod receiving member;

a sleeve for clamping the clamp device against the cross rod; and side openings in the receiving member that open to the bore to allow the cross rod to be pivoted in and out of the bore through the side openings, wherein the cross rod has lateral surfaces which may be pivoted relative to the rod receiving member ~~towards and away from~~ into and out of the side openings.

25. (Currently Amended) The connecting ~~member~~ assembly of claim 24 wherein the cross rod has a central longitudinal axis, and the rod receiving member has a central longitudinal axis.

26. (Currently Amended) The connecting ~~member~~ assembly of claim 24 wherein the cross rod may be pivoted to a position such that the cross rod is protruding from one of the side openings.

27. (Currently Amended) The connecting ~~member~~ assembly of claim 25 wherein the lateral surfaces of the cross rod are beveled towards the central longitudinal axis of the cross rod at an end of the cross rod.

Application No. 10/692,460
Amendment dated June 19, 2007
Reply to Office Action of January 19, 2007

28. (New) The connecting assembly of claim 1 wherein the actuator member is rotatable by about 80° to about 110° to the locked position thereof corresponding to the clamped position of the locking member.

29. (New) The connecting assembly of claim 1 wherein the actuator member has an axis of rotation and the actuator member shifts axially along the axis of rotation during rotation of the actuator member about the axis of rotation to the locked position.

30. (New) The connecting assembly of claim 10 wherein the sleeve is rotated to clamp the clamp device against the cross rod.